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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,009	12/04/2001	Masayuki Saito	108384-00005	7966

7590

03/27/2003

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/000,009

Applicant(s)

SAITO, MASAYUKI

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-7, drawn to an LPCVD apparatus, classified in class 118, subclass .
 - II. Claim 8, drawn to a method of manufacturing a thin film, classified in class 427, subclass 419.8.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, for example, the trap is used to trap products of an etching method.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Bob Murry (202.783.6040) on March 7, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-7. Affirmation of this election must be made by applicant in replying to this Office action. Claim 8 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 requires "on which a thin film being precipitated" and is grammatically incorrect.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujikawa et al (USPat. 5,766,685^{04/21/4}) in view of Calton et al (USPat. 5,649,428). Fujikawa teaches a CVD apparatus (Figure 1; column 3, lines 43-65) comprising:

- i. a container (16, 18; Figure 1; column 3, lines 59-65) for accommodating a organometallic compound ("TDEAT"; column 3, lines 43-48), the compound serving as a raw material; a heating means (30; column 4, lines 1-9) for heating the container (16, 18; Figure 1; column 3, lines 59-65) and vaporizing the organometallic compound (TDEAT) to obtain a raw material gas; a reactor (4; Figure 1) for accommodating a substrate ("W") on which a thin film is deposited (TiN); an exhaust pump (46; column 4, lines 15-20) for maintaining a low pressure atmosphere (200mTorr; column 6, lines 25-30) within the reactor (4; Figure 1);

and a trap (40; sometimes referred to as a “tramp” or “removing apparatus”) provided on the upstream of the exhaust pump (46; column 4, lines 15-20) and cooling used raw material gas supplied from the reactor (4; Figure 1)

- ii. 4. The LPCVD apparatus (Figure 1; column 3, lines 43-65) according to claim 1, wherein the apparatus (Figure 1; column 3, lines 43-65) is provided with a trap-pressure-regulating valve (44) for adjusting the internal pressure in the trap, the regulating valve being located between the trap (40; sometimes referred to as a “tramp” or “removing apparatus”) and the exhaust (46; column 4, lines 15-20)
- iii. 5. The LPCVD apparatus (Figure 1; column 3, lines 43-65) according to claim 1, wherein the apparatus (Figure 1; column 3, lines 43-65) is provided with a back-flow valve (38; column 4, lines 15-20) for preventing a back flow of the used raw material in the trap, the back-flow valve (38; column 4, lines 15-20) being located between the reactor (4; Figure 1) and the trap.
- iv. 6. The LPCVD apparatus (Figure 1; column 3, lines 43-65) according to claim 1, wherein the apparatus (Figure 1; column 3, lines 43-65) is connected with a first (36) and a second (containing bellows 48) pipes and provided with a by-pass pipe (50) which bypasses the trap (40; sometimes referred to as a “tramp” or “removing apparatus”), the first pipe (36) connecting the reactor (4; Figure 1) and the trap (40; sometimes referred to as a “tramp” or “removing apparatus”) and the second pipe (containing bellows 48) connecting the trap (40; sometimes referred to as a “tramp” or “removing apparatus”) and the (46; column 4, lines 15-20) and the pump (46)

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- v. 7. The LPCVD apparatus (Figure 1; column 3, lines 43-65) according to claim 1 wherein the by-pass pipe (50) is provided at one portion thereof with a back-flow valve (52)

Fujikawa does not teach:

- vi. that his trap (40; sometimes referred to as a “tramp” or “removing apparatus”) is provided with a honeycomb-structure cylindrical fillers in a flowing passage through which the used raw material flows
- vii. the length of the honeycomb-structure cylindrical fillers is in a range of 0.01 to 1.0 m in a direction along which the used raw material flows
- viii. the honeycomb-structure cylindrical fillers have holes with a maximum diameter of 0.5 to 10 mm
- ix. the by-pass pipe (50) is provided at the both ends thereof with a back-flow valve

Calton teaches a gas trap (“moisture transfer wheel”; 52; column 7, lines 20-25, 60-67) with a honeycomb structure (Figure 3). Specifically, Calton teaches a trap (52) is provided with a honeycomb-structure (Figure 3) cylindrical fillers (14) in a flowing passage through which material flows

It would have obvious to one of ordinary skill in the art at the time the invention was made to:

- i. replace Fujikawa’s gas trap with Calton’s gas trap with a honeycomb structure - Motivation to replace Fujikawa’s gas trap with Calton’s gas trap with a honeycomb structure is to

increase the heat transferred to the trap as taught by Calton (column 4, lines 15-20; column 9, lines 4-16)

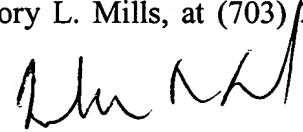
- ii. change the dimensions of the Calton's honeycomb structure to influence the surface area - Motivation to change the dimensions of the Calton's honeycomb structure to influence the surface area is to increase the heat transferred to the trap as taught by Calton (column 4, lines 15-20; column 9, lines 4-16). Additionally, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)
- iii. add a second back flow valve to Fujikawa's by-pass pipe (50) that already has one back flow valve (52) - Motivation to add a second back flow valve to Fujikawa's by-pass pipe (50) that already has one back flow valve (52) is to provide additional piping line isolation. Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPat. 5,766,683; 6,007,330; 6,238,514; 6,107,198; 6,197,119; 6,506,352; 6,086,711; 5,958,510; 5,950,675; 5,819,683; 5,575,853; 5,015,503; 6,361,607; 2001/0017080 A1; 4,469,720; 6,077,562; 6,238,514; 4,897,096; 5,303,558; 6,107,198; 6,402,806; 2003/0037730 A1; 2002/0053191A1; 6,159,298; 6,159,298.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.



JEFFRIE R. LUND
PRIMARY EXAMINER